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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,208	11/30/2001	Berndt Cramer	R 37137	1768

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EXAMINER

OLSEN, KAJ K

ART UNIT

PAPER NUMBER

1753

DATE MAILED: 08/25/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/914,208

Applicant(s)

CRAMER ET AL.

Examiner

Kaj Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 4-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. In the claims, applicant places various terms in parenthesis, which renders it unclear if these terms are part of the claimed invention.

5. In claim 4, it is unclear if "including the nitrogen oxide concentration in exhaust gases" is meant to be part of the claimed method or if this just represents the preferred oxidizing gas to be determined.

6. Claim 4 specifies "applying a voltage to the electrodes". First it is unclear which electrodes the applicant is referring to. It would appear that the applicant is referring to all of the specified pump electrodes, but not the reference electrode because the applicant does not teach applying voltage to that electrode (see fig. 3). However, clarification is requested. This

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limitation is further confusing because it specifies applying *a* voltage (singular) to a plurality of electrodes. However, the specification clearly shows that a different voltage is to be applied to each of the pumping electrodes (see fig. 3).

7. In claim 4, the limitation "evaluating a pump current as a measurement signal" is confusing because it is unclear what particular pump current is being monitored. Applicant has not specified any particular pump current being generated (and from what electrode that pump current is being generated) nor have they even specified a step of measuring the current for this evaluation step.

8. In claim 4, it is unclear if the limitation "in dependence upon the currents" is actually being taught by the applicant's disclosure. In particular, this limitation appears to imply that the currents flowing through the feedlines and/or between the electrodes are being utilized to change the voltages. However, what the specification appears to teach is a step of changing the voltage based on factors that have been chosen to reflect the resistances R_L and R_E (see p. 5 of the specification). This would appear to be distinct from the claim specified use of current.

Although the currents would be in part proportional to the conductances represented by R_L and R_E , the currents would also be a function of the levels of oxygen and oxidizing gas in the measured gas. Because the currents would constantly change as a result of gas mixture makeup, specifying that the changing is somehow a function of the currents implies that applicant is actually monitoring the currents, which the examiner does not believe is being taught. The examiner recommends the applicant amend the claim to specify that the voltage is being changed by dependent factors that represent the characteristic resistances (or conductances) of the feedline and/or between the electrodes.

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9. In claim 4, it is unclear what “pregivable desired” means. Does the applicant mean ‘predetermined’?

10. In claim 4, the limitation “applying said voltages” is confusing for a couple of reasons. First, it is unclear what voltages the applicant is referring to. The examiner is interpreting it as referring to the application of the changed voltage, but clarification is requested. Second, this limitation is confusing when read in conjunction with the earlier applying voltage step. In particular, applicant specifies first applying a voltage to the electrodes, then changing the voltage, followed by an additional step of applying a new changed voltage to the electrodes. That combination of limitations gives the impression that the applicant has two distinct steps of applying voltage to the electrodes. However, the specification only teaches applying a single voltage to each of the pumping electrodes. That voltage applied is the first voltage (U_{ipe} , U_{o2} , U_{no}) only after it has been altered by the changing step. In short, applicant never taught applying the first specified voltages to the electrodes. Rather applicant fed those first specified voltages into a circuit, which then alters those voltages based on characteristic factors. Only the altered voltages are ever actually applied to the electrodes.

11. In claim 4, it is unclear what is meant by “in the interior of said sensor”. Clarification is requested.

12. In claim 5, the examiner finds the applicant’s use of the phrase “wherein voltages are added to the voltage applied to the electrodes” indefinite for the same reasons illustrated in paragraph no. 10 above. Moreover, it is unclear if the applicant’s “added” is a further recitation of the previous “changing” limitation in claim 4.

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13. In claim 5, the examiner also questions applicant's reference to "currents" in the claim for the same reasons illustrated in paragraph no. 8 above.

14. Claim 5 is also confusing because the applicant is now specifying that the "added" or "changing" can also be a function of sliding mean values of the voltages in addition to other potential factors. However, claim 4 specified that the change was dependent only on feedline or on the "current" between the electrodes. These additional choices of dependences would appear to potentially make claim 5 broader than claim 4, which dependent claims are not permitted to do. Clarification is requested.

15. In claim 6, applicant refers to the occurrence of an oscillation, but never specifies where this oscillation is occurrence (across the electrodes? If so, then which electrodes?).

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kurokawa et al discloses a NO_x sensor where the voltages applied to the sensor are changed based on the currents between the electrodes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (703) 305-0506. The examiner can normally be reached on Monday through Thursday from 7:00 AM-4:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached at (703) 308-3322.

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When filing a fax in Group 1700, please indicate in the header "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of this application. This will expedite processing of your papers. The fax number for regular communications is (703) 305-3599 and the fax number form after-final communications is (703) 305-5408.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read 'Kaj K. Olsen', with a long horizontal flourish extending to the right.

Kaj K. Olsen
Patent Examiner
AU 1753
August 21, 2003